

GALLAGHER & ASSOCIATES

CONSULTING RADIO ENGINEERS

HAGERSTOWN, MD

ORIGINAL

Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, D.C. 20554

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In the Matter of)
)
Amendments of Parts 73 and 74)
of the Commission's Rules to)
Permit Certain Minor Changes)
in Broadcast Facilities)
Without a Construction Permit)

MM Docket No. 96-58

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COMMENTS OF CHARLES I. GALLAGHER, P.E.

These comments are related to the Notice of Proposed Rulemaking as titled above and are the comments and opinions of the undersigned and no other.

Changes in Power and Antenna Height

In its Notice of Proposed Rulemaking, the Commission discusses, at Paragraph 5, allowing stations that comply with the separation requirements of 47 CFR §73.207 to increase their effective radiated power (ERP) to the maximum allowed by 47 CFR §73.211(b) without need for a construction permit. In addition, at paragraph 7, the Commission requests comments related to allowing stations to reduce their ERP without construction permit and points out questions related to coverage of the community of license. Further, at paragraph 17 the Commission suggests changes to 47 CFR §73.1690(c)(1) to permit a greater latitude in adjustments to the height of the center of radiation of the transmitting antenna. Since coverage and interference are related to both ERP and antenna height, these factors should be treated as a single entity.

The existing requirements of 47 CFR §73.1690(c)(1) permits a station to change its antenna height within plus or minus two meters, provided

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that "the parameters are within that permitted by its class designation." Since no change in ERP is permitted this means that a station operating with an antenna height at or above the height limit set by 47 CFR §73.211, cannot increase its antenna height at all. In Appendix A, the Commission proposes similar language in §73.1690(c)(1): "...provided there is no change in...station class as a result of the variation."

The coverage and interference potential of an FM station is related to its ERP and its antenna height. However, as the Commission points out at paragraph 5, stations are protected to the maximum facilities permitted by 47 CFR §73.211, which includes ERP and height. It is suggested that the Commission permit not only increases and decreases in ERP, with appropriate required showings related to principal community coverage, but also permit both increases and decreases in the antenna height, within the limits of 47 CFR §73.211, without need for construction permit. These changes, which are all related, should be permitted, provided that the pertinent station meets all separation requirements for its class and that the changes do not involve any change in class or in the overall height of the supporting structure. Any change in location of the transmitting site should, of course, require a construction permit.

This increased flexibility would permit a station located on an existing tall tower to take advantage of space available on that tower, or a permittee that belatedly discovers a conflict with a guy wire attachment point and to change its antenna height, or a permittee to use an antenna with less bays than originally planned, and delete the lower bays only. All will be able to adjust their antenna heights and ERP as necessary, without the cost and delay of filing a Form 301. The suggested rule

changes discussed above would permit a licensee or permittee to change the antenna height as well as the ERP up to the maximum permitted for its class. If the new height is greater than that specified by §73.211(b)(1), the ERP can be decreased to compensate, as permitted by §73.211(b)(2). It would not be a difficult chore for the Staff to verify that the new ERP/HAAT combination was within the limits of the station class. Small calculation discrepancies that might occur, are not likely to result in detectable interference, and could be easily corrected by a letter to the licensee, and on the license. Where these changes result in a decrease in coverage, the Commission can require a demonstration that the new facilities will continue to meet the principal community coverage requirements. Where there is no change in coverage, both ERP and height changes can be approved with a minimum effort on the part of the staff.

Accordingly, the arbitrary selection of plus and minus two meters should not be a limiting factor, and, just as the Commission proposes ERP changes, any antenna height changes should be permitted consistent with the class limit and city coverage.

Codification of Policy Related to FM Directional Antennas

At paragraph 25 the Commission proposes to codify the staff's present policy related to the size of the measured composite FM directional antenna pattern as compared to the size of the authorized composite pattern. The last sentence in paragraph 25 points out that "This requirement would conform the FM broadcast service to the AM service in this regard." It is agreed that the Commission should codify as many of its "Policies" as possible. It is often difficult to find a written version of some of the staff policies (except when an applicant or

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permittee receives a letter of conflict, and then only the parties to the letter know the policy).

In this case, however, the policy as written at paragraph 25 is not the policy as it has existed for many years. Nor does it conform with §73.151(a) of the AM Rules.

Section 73.151(a) of the AM Rules states that a "showing must be submitted to establish...that the effective measured field strength (RMS) at one mile is not less than 85 percent of the effective field strength specified for the standard pattern..." Note that it is the RMS of the measured pattern that must be within 85% of the RMS of the standard (or "authorized") pattern.

The policy for FM directional antennas as it existed before its appearance in paragraph 25 was that the RMS of the measured composite relative field pattern must be within 85 percent of the RMS of the authorized composite pattern. It was NOT that the AREA of the measured pattern must be within 85% of the AREA of the authorized pattern. Since area within a relative field pattern varies as the square of its RMS, an 85% limit in area is a 92.2% limit in RMS. This increased restriction would make it difficult for an antenna manufacturer to develop a final measured pattern whose RMS was within 92.2% of the RMS of the authorized pattern.

Some applicants for construction permits invest the expense of having a measured directional pattern developed before they file the application for construction permit. This procedure involves considerable cost and a delay so is not often followed where competing applications are possible or where a "window" filing does not permit the delay.

The policy as described in paragraph 25 would result in many more applications for modification of construction permit to change the authorized pattern so that the measured pattern would comply with the increased restriction. This would result in a considerable increase in the staff workload.

At paragraph 25, the Commission references two letters in support of its 85% Policy.¹ Neither letter specifically references the "85% Policy" in terms of the measured relative field pattern. Both letters contain a comparison of the predicted 1 mV/m contour based on the authorized composite pattern with the 1 mV/m contour based on the measured composite pattern. Note that the Staff has used the measured pattern to predict coverage even though the Commission has said that "The measured patterns...will not be used to determine distances to contours." (See Report & Order in MM Docket No. 87-121, at paragraph 40, Adopted December 12, 1988.) The letters challenge two different applications on the grounds that the measured patterns do not represent efficient utilization of spectrum. In one case the 1 mV/m contour based on the measured pattern encompassed only 79.4% of the area within the 1 mV/m contour based on use of the authorized pattern. In the other case the percentage was 80.5%. Does this mean that an applicant is going to be required to make a spectrum utilization showing with its application for license?

The original policy that the RMS of the measured pattern must be within 85% of the RMS of the authorized pattern was easy to apply and not

¹ Letter to Sunbury Broadcasting Corp., BPLH-940805KC, Reference No. 1800B3-EPD, dated February 22, 1996; Letter to Randolph Victor Bell, BLH-951027KA, Reference No. 1800B3-JAG, dated November 21, 1995.

difficult to achieve in the field. It had its own safeguards. The RMS of a relative field pattern is an indicator of the overall efficiency of the pattern. Since both RMS and relative field are in voltage units, they must be squared to relate to power. The square of the RMS is the average radiated power of the directional pattern. A value of 85% of the RMS means that the average radiated power of the directional is 72.25% of the maximum radiated power. If we compare the area within the 1 mV/m contour of each class of station when operating (non-directionally) with its maximum ERP and HAAT with the area when operating with 72.25% of the maximum ERP, we find that the 1 mV/m contour of a class A station will cover 86.4% of its maximum area, and that the percentage figure increases progressively to 92.9% for a class C station. Note that in each case the percentage figure is well above the 79.4% to 80.6% quoted in the letters referenced above.

Since all FM stations (except a few under §73.215) are protected to the maximum facilities permitted by §73.211, is the Staff is going to refuse to license a station because its proposed facilities produce a coverage contour that is less than its protected area.²

It is possible that the "policy" outlined in paragraph 25 and as proposed in Appendix A is a misquote of the actual policy and that the staff intended to say 85% of the RMS and not 85% of the AREA. If this is true then the undersigned is wholly in agreement that this should be codified, if for no other reason than to avoid future misunderstandings. However, if, as it appears, this is a re-definition of an old standing

² This is particularly true of class C stations where few operate with maximum facilities.

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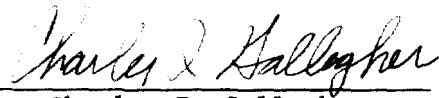
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policy, with a resulting increase in difficulty of compliance, then it is requested that the Commission re-examine the policy and make the new rule require that the RMS of the measured composite pattern be within 85% of the RMS of the authorized composite pattern.

I, Charles I. Gallagher, certify under penalty of perjury that these engineering comments in rulemaking are my comments and opinions. I further state that I am a Consulting Radio Engineer, and a Registered Professional Engineer in the State of Maryland, Registration No. 11415, that my qualifications are a matter of record with the Federal Communications Commission, having been presented on previous occasions, and that I have been a consulting engineer to the broadcasting industry for more than forty years. The calculations included with these Engineering Comments are true and correct to the best of my knowledge, information and belief.


Charles I. Gallagher

May 10, 1996